



RMRS/OPS-PRO.097

**WASTE MANAGEMENT PLAN  
FOR THE  
BUILDING 788 CLUSTER  
DECOMMISSIONING PROJECT**

**REVISION 0**

**DECEMBER 1998**

**ADMIN RECORD**


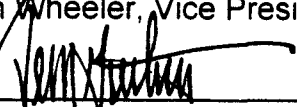
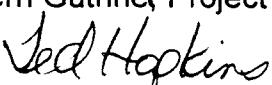

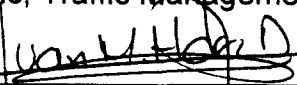
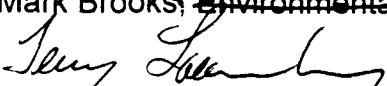
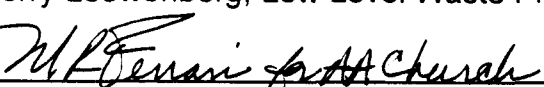
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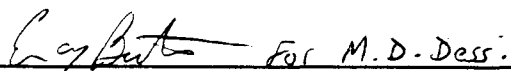
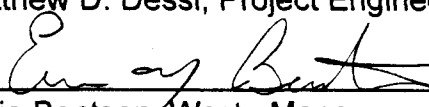
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## ACRONYMS

ACM	Asbestos-containing material
AE/C/CM	Architectural Engineering / Construction / Construction Management
CCR	Colorado Code of Regulations
CDD	Closure Description Document
CDPHE	Colorado Department of Public Health and Environment
CSO	Customer Service Organization
D&D	Decommissioning and Demolition
DOE	U. S. Department of Energy
DOT	Department of Transportation
EPA	Environmental Protection Agency
HAZ	Hazardous Waste
IDC	Item Description Code
IHSS	Individual Hazardous Substance Site
IM/IRA	Interim Measures / Interim Remedial Actions
LLW	Low Level Waste
LLM	Low Level Mixed Waste
LSA	Low Specific Activity
MAA	Material Accountability Area
NDA	Non-Destructive Assay
NON	Non-Hazardous Waste
NTS	Nevada Test Site
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCB	Polychlorinated biphenyl
PPE	Personnel Protective Equipment
PU&D	Property Utilization and Disposal
P/WRE	Property / Waste Release Evaluation
RCRA	Resource Conservation and Recovery Act
RMA	Radioactive Material Area
RMRS	Rocky Mountain Remediation Services, L.L.C.
RTR	Real Time Radiography
SCO	Surface Contaminated Object
SEP	Solar Evaporator Ponds
SITE	Rocky Flats Environmental Technology Site
SWO	Solid Waste Operations
TID	Tamper Indicating Device
TSCA	Toxic Substances Control Act
WAC	Waste Acceptance Criteria
WCO	Waste Certification Oversight
WEMS	Waste Environmental Management System
WFC	Waste Form Code
WGI	Waste Generator Instruction
WMP	Waste Management Plan
W/RT	Waste / Residue Traveler
WSRIC	Waste Stream and Residue Identification and Characterization

## **1.0 INTRODUCTION**

Decontamination, decommissioning, dismantlement, and demolition of Rocky Flats Environmental Technology Site (the Site) facilities generate a variety of solid and liquid wastes. The waste type may be designated as Radioactive, Mixed, Hazardous, TSCA, Non-Regulated, Asbestos, and Industrial Sanitary waste and must be managed in accordance with State and Federal regulations.

The Solar Evaporation Ponds (SEP) are located in the Northeast quadrant of the Protected Area and includes Ponds 207A, 207B North, 207B Middle, 207B South and 207C. The ponds are asphalt lined and were used to store and treat liquid process waste generated from the Site's weapons production activities. Placement of process waste material into the SEP ceased in 1986 due to changes in waste treatment operations. In 1986, a Resource Conservation and Recovery Act (RCRA) Part B operating permit application was submitted to the Colorado Department of Public Health and Environment (CDPHE), reporting that the SEP were an interim status unit scheduled to be closed. The SEP were first identified as a Solid Waste Management Unit, which later became Individual Hazardous Substance Site (IHSS) 101. They are part of the Industrial Area Operable Unit (OU). The SEP have undergone various closure actions since 1988, when the Ponds Closure Plan was submitted to CDPHE. Interim Measures and Interim Remedial Actions (IM/IRAs) were developed in 1992 and 1995 to address closure and remedial actions.

The Building 788 Cluster includes Building 788, T788A, 207A Clarifier (Clarifier Tank T138), Building 308A pump house, the SEP and miscellaneous structures and equipment within the vicinity. Building 788 is a permanent storage facility located between ponds 207A and 207C. Building 788 was built in 1984 to support pondcrete operations and provide a facility to temporarily store pondcrete. An addition to the original building was constructed on the north side in 1986. The building is RCRA Unit 21, and is permitted to store low level mixed (LLM) waste. An interior structure is located in the northwest corner of the building that was used to repackage wastes and decontaminate material and equipment.

The 207A Clarifier Tank is part of Interim Status RCRA Unit 48, the Pondcrete Solidification Process. It was constructed as part of the treatment process to convert pond sludge into pondcrete, a mixture of SEP sludge and portland cement. The Clarifier Tank is located on the East side of Building 788. It became operational in 1986 and was shut down in 1989 with sludge remaining in approximately half of the tank. Current operations have removed all sludge from the tank in an effort to classify the tank RCRA stable. A fixative designed to stabilize any loose radioactive contamination may be applied to the inside of the Clarifier depending upon the radioactive survey results.

### **1.1 PURPOSE**

The purpose of this document is to describe the waste management system that is in place, and to address waste management issues as they pertain to decommissioning and demolition (D&D) of the Building 788 Cluster. The technical basis for development

of the Waste Management Plan (WMP) is outlined in the U.S. Department of Energy (DOE), Office of Environmental Management Decommissioning Resource Manual, dated August 1995, and the Draft Decommissioning Program Plan.

## **1.2 SCOPE**

The scope of this project includes the decommissioning and demolition of Building 788, the Clarifier tank, ancillary treatment equipment, Building 308A pump house, relocation of T788A, and the general cleanup and waste packaging of waste around the SEP. The buildings will be removed to the slab grade as part of closure of RCRA Units 21 and 48 per the Closure Description Document (CDD).

During demolition and cleanup activities, this project will generate many types of waste, and also materials for recycle. Types of waste expected to be generated during each phase are discussed in Section 3. Management strategies for the types of waste are discussed in Section 4. Projected volumes are estimated in Table 1. These waste projections are based upon process knowledge, the site hazard assessment characterization, and preliminary planning.

In the event a waste stream not identified in this summary is encountered in field activities, the Project Manager and Waste Coordinator will immediately be notified. Project personnel and the Customer Service Representative will determine the most appropriate management and disposal options for an unanticipated waste stream.

## **2.0 RESPONSIBILITIES**

This section of the WMP presents an overview of the project organization. Key waste management personnel for the project, and a description of their project responsibilities are presented below. Personnel associated with the handling, packaging, testing, shipment, processing, and pre-certification of low level waste shall be trained and qualified to applicable criteria, in accordance with the Training User's Manual, 1-1000-TUM.

### **2.1 Project Manager**

The Project Manager is responsible for management of the project including overall responsibility for the waste generated by the project. These responsibilities include assuring adequate and timely characterization of the waste and a projection of the quantity of waste expected. The Project Manager ensures required plans are in place to handle the types of waste expected to be generated, and that a cost estimate is made and funds are available to dispose of the waste. The Project Manager oversees and coordinates all project-specific waste management issues, including preparation of the WMP and assuring its implementation. The Project Manager coordinates activities with the Waste Coordinator, Project Engineer, and Demolition Manager to ensure that issues associated with waste generation and management are addressed, including proper characterization, segregation, packaging, meeting appropriate Waste Acceptance Criteria (WAC), documentation, and transportation.

## **2.2 Waste Coordinator**

This individual is the contact point for waste management activities for the project. The Waste Coordinator is responsible for ensuring project waste is in compliance with all relevant regulations and procedures. This includes ensuring all waste generated is properly characterized, packaged to appropriate Waste Generator Instructions (WGI), managed, documented, inspected, and shipped to a storage facility. The Waste Coordinator also reviews the work package for waste management actions.

The Waste Coordinator coordinates waste management activities across organizational lines and interfaces with groups such as Radiological Engineering, Waste Operations, Traffic Management, Radiological Operations, and the Architectural Engineering / Construction / Construction Management (AE/C/CM) Subcontractor (waste generator). This individual arranges for temporary storage and onsite transfers, and oversees subcontractor operations that involve loading of recycle material for offsite disposal.

## **2.3 AE/C/CM Subcontractor (Waste Generator)**

The selected AE/C/CM subcontractor will be the waste generator and verifier of project waste, and will supply trained and qualified waste generators. They are responsible for proper waste identification, segregation, size reduction, packaging per the WGI, and completing the Waste/Residue Traveler (W/RT).

## **2.4 Customer Service Organization (CSO)**

The CSO Representative performs a pre-job walk down to identify all potential waste streams that may be generated. CSO provides technical support regarding waste generation, packaging, and characterization review. The CSO generates a WGI for all waste streams when required. After waste is packaged, the CSO performs a waste package verification to ensure waste is packaged to the WGI and all applicable procedures.

## **2.5 Waste Operations Support Organization**

The Waste Operations Organization provides services to the Site, including receipt, storage, and disposal of waste and other materials from the project. Waste Operations oversees the transportation of waste onsite to a designated storage area, manages the waste according to appropriate regulations, and coordinates offsite shipments to ensure the waste is sent to an approved disposal or recycle facility.

### **2.5.1 Solid Waste Operations (SWO)**

Solid Waste Operations provides key process knowledge of waste items in the SEP area to assist in the proper waste characterization of material. SWO schedules the transfer of all waste packages that have been inspected and comply with the WGI to RMRS storage areas.



Debris treatment may be an option for various impervious materials, such as rubber hoses used to transfer SEP water and sludge. Treatment Unit 788.3 located at the Building 966 Decontamination Pad has been permitted for mixed waste debris treatment for SEP debris. Debris will be treated in accordance with Table 1, Alternative Treatment Standards for Hazardous Debris (6 CCR 1007-3 Section 268.45). Waste items will be considered LLW after treatment if it meets the standards of a "clean debris surface" by visual inspection. The treatment unit consists of the decontamination pad, portable pump, portable transfer line and storage containers. The wash water is collected in the decontamination pads sump where it will be pumped into 55 gallon drums which will be staged in secondary containment pans. This waste stream is characterized as LLM based on process knowledge. The wash water will be sampled and analyzed in accordance with the sampling and analysis plan. The sample results will be compared with the WAC for Unit 374.3 where the waste is to be treated.

Radioactive and hazardous waste may only be generated and packaged by waste generator qualified personnel. Waste packages must conform to the particular WGI for that waste stream. After the waste is packaged, final documentation will be prepared and packages inspected before shipments leave the Building 788 area. Radioactive waste packages will have the package activity calculated by Radiological Engineering. A radioactive waste variance has been received to utilize a full time Waste Inspector in lieu of sending waste packages to Real Time Radiography (RTR). The project then transfers the waste to Solid Waste Operations for storage, certification, and offsite disposal. Recyclable and Industrial Sanitary Waste may be taken directly offsite under the direction of Waste Operations personnel and the Waste Coordinator.

The following sections describe the types of waste that will be generated for each phase of the project.

### **3.1 BUILDING STRIP-OUT**

Activities during this phase will include the removal of any leftover equipment and material from Building 788, radiological decontamination if required, and removal of miscellaneous debris from around the SEP. Types of waste that will be generated during strip-out include LLW, LLM, Hazardous (HAZ), Non-Regulated (NON), recycle, and material to be dispositioned by PU&D. Qualified waste generators will work with the Waste Coordinator and Radiological Technicians to identify and segregate LLW waste from both LLM and HAZ waste. Metal waste will be separated from non-metallic items and managed as recyclable material. The description of each waste type and individual waste streams are discussed below.

LLW IDC's that will be generated during stripout include 861 and 5001. IDC 861 will consist of dry combustibles such as wood pallets, benches, personnel protective equipment (PPE), and other miscellaneous combustible items that did not come into contact with RCRA listed waste (SEP water or sludge). IDC 5001 SCO will consist of hoses and miscellaneous plastic, metal, and other non-porous waste items that did not come into contact with RCRA listed waste (SEP water or sludge). Metal items will include only those that can not be recycled, such as copper or aluminum, or that have a large percentage of non-metallic parts associated with it.

LLM IDC's that will be generated during stripout include 851 and 5001. This waste will carry the RCRA hazardous waste codes of F001, F002, F005, F006, F007, and F009. This is consistent with Pondsludge characterization without the characteristic code for Cadmium (D006), which would not be applicable to this waste. This waste is considered mixed under of the Contained-In Rule, because listed waste has come in direct contact with debris' surface. IDC 851 will consist of dry combustibles, such as wood stairs and other miscellaneous combustible items that have been in contact with RCRA listed waste (SEP water or sludge). IDC 5001 SCO will consist of rubber hoses and other miscellaneous items used to transfer and cleanup SEP water and sludge. Residual dried sludge will be left in the hoses and packed as LLM. Hoses may be cut open and treated to the alternative debris treatment standards at the decontamination pad to become LLW.

HAZ waste expected to be generated during stripout activities includes WFC 1529, 1928, 1937, and 1938. WFC 1529 will consist of gasoline that is drained from pumps and equipment around the Solar Ponds. This waste will carry the EPA Codes of D001 (ignitable) and D018 (Benzene). WFC 1928 is fluorescent light tubes that will be removed from the office rooms in Building 788, and will carry EPA Code D009 (Mercury). WFC 1937 is Mercury / Sodium vapor lamps in Building 788. These bulbs carry EPA codes D008 (Lead) and D009. WFC 1938 is incandescent light bulbs that are in miscellaneous light fixtures, and will carry EPA Code D008.

Toxic Substance Control Act (TSCA) waste streams that may be generated are WFC 1973, which are light ballasts that contain PCB's. Due to the date of construction of Building 788, it is not expected that there will be light ballasts containing PCB's.

NON waste will consist of WFC's 1950, 1951, 1971, and 1980. WFC 1950 will consist of oil and hydraulic fluid removed from equipment in the SEP area. This "USED OIL" will be non-hazardous by process knowledge. WFC 1951 will consist of coolants such as ethylene glycol removed from pieces of equipment. Fingerprint and gross alpha/beta analysis will be performed on these liquids. WFC 1971 will consist of non-PCB light ballasts removed from light fixtures in Building 788. WFC 1980 will consist of alkaline and carbon-zinc batteries removed from lights and instruments.

Recycle waste streams that will be generated are 1542 and 1980. WFC 1542 will consist of freon that is recovered from the refrigerator in Building 788 by Site maintenance personnel. WFC 1980 will consist of lead acid batteries that are removed from forklifts.

Recycle scrap metal going to metal melt includes IDC 480. The metal is potentially radioactively contaminated and consists of piping, pumps, fittings, tools, and other miscellaneous metal items. It does not include copper, aluminum, or other items that have a large percentage of non-metallic parts associated with it.

Reusable items that will be transferred to PU&D for dispositioning include transformers, chargers, heaters, a generator, lighting, lockers, and office and computer equipment.

### **2.5.2 Waste Disposal Projects**

The Waste Disposal Projects organization is responsible for the offsite shipment of project wastes and materials for recycling. Waste Disposal Projects prepares the waste for offsite shipment, maintains arrangements with offsite facilities for receipt of Site waste, schedules waste packages for recycle material, and provides services necessary to support project requirements.

### **2.6 Waste Inspector**

The project Waste Inspector provides independent verification of all radioactive waste that is generated as part of the certification process. The Waste Inspector performs In-Process Inspections to procedures and applicable variances, and performs a dock inspection on closed waste packages before being transferred to storage.

### **2.7 Waste Certification and Oversight (WCO)**

Waste Certification and Oversight certifies that radioactive wastes are properly segregated and packaged through review of inspection, test, and surveillance information. WCO certifies that low level waste (LLW) and low level mixed waste (LLM) meet the applicable WAC for the disposal facility, and ensures radioactive waste is in compliance with DOE and federal regulatory requirements.

### **2.8 Traffic Manager**

Traffic Management works with Waste Operations and the Waste Coordinator to ensure that waste packages are transported in a timely manner to the appropriate treatment, storage, or disposal location. Traffic Management is responsible to see that waste and recycle packages meet the requirements of the Department of Transportation (DOT) for shipping material offsite. This group also prepares the Bills of Lading or Environmental Protection Agency (EPA) Uniform Hazardous Waste Manifests for the waste shipments.

### **2.9 Radiological Engineer**

The Radiological Engineer is responsible for identifying all radiological surveys necessary for the free release of equipment or materials to Property Utilization and Disposal (PU&D) or for offsite disposal. The project Radiological Engineer provides the documentation for the radiological characterization of waste material shipped as LSA or SCO. This includes providing Surface Contaminated Object (SCO) and Low Specific Activity (LSA) calculations to be used to demonstrate compliance with DOT shipping requirements. No equipment or building debris will be free released and allowed to leave the Building 788 Cluster as non-radioactive material without receiving a Property / Waste Release Evaluation (PWRE) from the project Radiological Engineer.

## **2.10 Characterization Specialist**

The Characterization Specialist is responsible for directing all sampling and analysis of building areas for both radiological and hazardous materials identification. The Characterization Specialist works with the Radiological Engineer to develop the survey plans. They will work with environmental specialists to develop sampling strategies for determining hazards within the buildings and debris in the SEP area, including asbestos, lead, polychlorinated biphenyls (PCB), beryllium, and other potential hazardous materials. The Characterization Specialist generates a Site Hazard Assessment Plan, Sampling & Analysis plans, and other sampling strategies as needed, and the final Site Hazard Assessment Report for the project.

## **3.0 WASTE GENERATION**

This section of the WMP provides a detailed description of the wastes and excess materials that will be generated by the Building 788 Cluster Decommissioning Project. It is expected that the stripout and debris cleanup will start in January, 1999. Work activities are scheduled to be completed by June 30, 1999 to meet the Order on Consent that requires the Clarifier tank removal. Waste will be transferred to storage units onsite until it is certified. Waste profiles to the Nevada Test Site (NTS) are in place, and profiles to Envirocare of Utah, Inc are currently under development as secondary waste to the Pond Sludge and Associated Debris profile.

Process knowledge, analytical data, and site hazard assessment characterization have been used to identify these wastes and excess materials. The D&D Waste Stream Residue Identification and Characterization (WSRIC) book will be used to document the characterization of project waste. It can be referenced to obtain characterization information and a description of the methods for waste segregation based on Item Description Codes (IDCs) or Waste Form Codes (WFCs). This information is required to properly characterize and prepare radioactive or hazardous waste for packaging and certification. Characterization and sampling requirements are defined in the Building 788 Site Hazard Assessment Plan (RF/RMRS-98-249). Project waste will be characterized and disposed of in accordance with the CDD. The Building 788 WSRIC book will be revised at the completion of the project to include D&D waste generation in Process 02.

Waste will be generated during each of the following phases of the project: (1) Building Strip-out, (2) Asbestos Abatement, and (3) Demolition. All waste types will follow a similar process flow for disposition. Before waste is generated, it must be identified and characterized using established methods and documentation. Project radioactive waste will be categorized as being either SCO or LSA to determine packaging requirements. A WGI or a packaging aid will be obtained from CSO for each unique waste output. Whenever possible waste material is segregated for reuse or recycle. The waste is then prepared for packaging. This may include decontamination, size reduction, draining of all free liquids, treatment to alternative treatment standards for hazardous debris, consolidation, and bagging. Project personnel will accomplish these activities, and prepare the required documentation.

### **3.2 ASBESTOS ABATEMENT**

Asbestos abatement will occur either concurrently or immediately following strip-out activities. During this phase of the project, non-friable Asbestos Containing Material (ACM) will be removed from the T788A porch prior to the trailer being removed from the Building Cluster area. Asbestos waste that is low-level in nature will be generated. The asbestos that has been identified includes brown tar in the roof shingles (approximately 100 square feet) from the porches on the East side of T788A.

IDC 438 will be generated and consists of roofing material with non-friable asbestos. The roofing material will be removed with the plywood base intact, and may have to be size reduced to fit into a wood or metal box. Waste will also include PPE worn during abatement. ACM workers must be trained to Colorado Regulation #8, Training and Certification. It has been determined that all of the asbestos waste will be classified as low-level asbestos waste.

### **3.3 DEMOLITION**

The demolition phase includes removal of the Building 788 shell, clarifier tank and shed, Building 308A pump house, and other equipment and structures associated with Treatment Unit 48. Types of waste that will be generated during demolition include LLW, LLM, industrial sanitary, and recyclable metal. A description of each waste type and individual waste streams are discussed below.

LLW IDCs include 861, 374, and 5001. IDC 861 will consist of the wood Clarifier shed, PPE, and other miscellaneous combustible items that did not come into contact with RCRA listed waste (SEP water or sludge). IDC 374 will consist of concrete removed from above ground portions of foundations. If the concrete was part of RCRA Units 21 or 48 it will be certified closed before it is removed. IDC 5001 is SCO waste comprising of rubber and plastic items and non-recyclable metal items such as copper or aluminum, or metal with a large percentage of associated non-metallic parts.

LLM IDCs include 505 and 5001. This waste will carry the RCRA hazardous waste codes of F001, F002, F005, F006, F007, and F009. This is consistent with Pondsludge characterization without the characteristic code for Cadmium (D006), which would not be applicable to this waste. This waste is considered mixed under the Contained-In Rule, because listed waste has come in direct contact with debris' surface. IDC 5001 may consist of plastic, rubber, or metal items associated with Treatment Unit 48 that can not go to metal melt. IDC 505 will be wash water generated during RCRA Closure activities such as decontamination and sampling of the remaining slabs.

Industrial Sanitary waste consists of WFC 1920, primarily consisting of fiberglass insulation in Building 788 between the inner and outer layers of the walls and roof.

Recycle metals going to metal melt includes IDC 480. These metals are potentially radioactively contaminated and consist of the walls and roof of Building 788, Building 380A, the clarifier tank, pug-mill, piping, pumps, and other miscellaneous metal items.

A summary of waste types generated, onsite storage facility, final disposition, and the volume estimated to be generated is listed below in Table 1. These estimated volumes may differ from actual volumes due to completion of additional characterization and the selection of waste management treatment options.

**Table 1: Estimate of waste to be generated from the Building 788 Cluster.**

<b>Waste Stream</b>	<b>Packaging and Onsite Storage</b>	<b>Final Disposition</b>	<b>Estimated Generated Volume</b>
Low Level Asbestos (brown tar in roofing shingles) Non-Friable	Wood or Metal Box,  Building 664 Cargos	Nevada Test Site	3 m <sup>3</sup>  1 full box
Low Level Waste (wood, plastic, cement, metal)	Wood or Metal Boxes,  Building 664 Cargos	Nevada Test Site	76 m <sup>3</sup>  24 full boxes
Low Level Mixed Waste (concrete, plastic, wood, rubber, metal)	Wood or Metal Boxes, Unit 14, or Building 906	Envirocare of Utah, Inc.	16 m <sup>3</sup>  5 full boxes
Low Level Mixed Waste (wash water or rinsate)	White 55 gallon drums,  Building 374 Liquid Waste Operations	Building 374 Liquid Waste Operations wastewater treatment unit.	0-5,000 gallons
Hazardous Waste (light bulbs, batteries)	Cardboard Boxes,  90 day unit 569-2210	Chemical Waste Management, Inc.	<1 m <sup>3</sup>
Non-Regulated Waste (light ballasts, batteries)	Grey 55 gallon drums,  Unit 5001	Chemical Waste Management, Inc.	<1 m <sup>3</sup>
Hazardous Waste Liquids (gasoline)	black and white 55 gallon drums,  90 day unit 569-2210	Chemical Waste Management, Inc.	50 gallons
Non-Hazardous Liquid Waste (oil, hydraulic fluid, ethylene glycol)	Green 55 gallon drums,  Unit 5001	Chemical Waste Management, Inc.	150 gallons

Waste Stream	Packaging and Onsite Storage	Final Disposition	Estimated Generated Volume
Industrial Sanitary Waste (insulation, metal, plastic)	Rolloffs	Front Range Landfill, Inc. Erie, Colorado	69m <sup>3</sup> 4,200 lbs 3 rolloffs
Reuse at PU&D (various pieces of equipment)	As is, or on pallets, PU&D	Reuse	15 m <sup>3</sup>
Recycle Material (lead acid batteries)	On pallets, Unit 5001	Resource Plastics Inc. (Gopher)	<1 yd <sup>3</sup>
Radioactive Scrap Metal for Recycle (all metal items in the cluster)	Sealand Cargos	GTS Duratek, Beaver Creek Operations, Oakridge, Tenn.	122m <sup>3</sup> 150,000 lbs 8 sealand cargos

## 4.0 WASTE TYPES

This section provides information on the different waste types generated by the project, and how each waste type will be managed.

### 4.1 LOW-LEVEL WASTE

Low-level radioactive waste is defined as being contaminated with transuranic elements (i.e. Americium and Plutonium) at a level of specific activity less than 100 nCi per gram of waste material, or wastes contaminated with non-fissile Uranium in any quantity. Fissile isotopes of Uranium (<sup>233</sup>U, <sup>235</sup>U) are limited to less than 15g per package. Historical information (analytical data) suggests that all of the radioactive waste produced as a result of the Building 788 Cluster decommissioning activities will be low-level in nature.

LLW will be shipped off-site in accordance with DOT regulations as either SCO or LSA category material. The Radiological Characterization for Surface Contaminated Objects procedure (PRO-267-RSP-09.05) will be used to make the radiological evaluation whether a waste is SCO or LSA. Porous material such as wood, concrete and PPE will be shipped as LSA waste. Non-porous waste material such as metal, plastic, and rubber will be shipped as SCO waste. SCO waste will be packaged into wood boxes. LSA waste will be packaged into wood boxes if activity is estimated to be below the A<sub>2</sub> value, or IP-2 metal boxes if above the A<sub>2</sub> value.

LSA and SCO waste will not be sent to the non-destructive assay (NDA) counter at Building 569. The SEP area is not a Material Accountability Area (MAA), and the waste is non-accountable material. Radiological Engineering will provide the documentation for the radioactive characterization of waste generated by the project. LSA package activity will be determined by weight based calculations that consider waste matrix, isotopic blend, and existing gross alpha/beta analysis. SCO package activity will be determined from weight based calculations derived from surface area and removable & fixed contamination surveys. A Radioactive Waste Variance (98-30) has been

granted to exempt packages from going to RTR when a Waste Inspector is present during all packaging operations.

LLW will be generated, packaged and managed in compliance with the Waste Characterization, Generation and Packaging Procedure (1-PRO-079-WGI-001), Solid Radioactive Waste Packaging Requirements (1-M12-WO-4034), and Solid Radioactive Waste Packaging (4-D99-WO-1100), with all required documentation. Radiological Technicians will perform the required surveys on the packages, and the Waste Inspector and CSO will perform inspections before transfer to Waste Operations for storage and disposal.

Radioactive waste packages will be staged outside in a Radioactive Material Area (RMA) to the North of 207C Pond. Empty and full boxes will be limited to groups of no more than ten, elevated off the ground, and covered with fire retardant tarps. Full boxes will be transferred from the SEP area in an expedient manner to reduce exposure to the elements. Surveillance will be conducted at least weekly on the boxes. LLW that results from decommissioning activities will be stored onsite, or when appropriate, shipped directly to an approved offsite disposal facility.

## **4.2 HAZARDOUS WASTE**

A hazardous waste is defined as waste that exhibits certain characteristics or is listed in 40 CFR 261 or the Code of Colorado Regulations (CCR), 6 CCR 1007-3, Colorado Hazardous Waste Regulations. All hazardous waste generated during this project will be managed in accordance with the Colorado Hazardous Waste Regulations 6 CCR 1007-3, and will be staged, managed, and inspected in a 90 day area after generation and packaging.

Hazardous chemicals were disposed of by Solid Waste Operations prior to the Building Cluster transition to RCRA Closure, and as a result, discovery of hazardous chemical waste is unlikely. All hazardous waste will be managed in compliance with the Hazardous Waste Requirements Manual (1-10000-HWR), and Non-Radioactive Waste Packaging 1-C88-WP-1027-NONRAD), and the Waste Characterization, Generation and Packaging Procedure (1-PRO-079-WGI-001).

HAZ waste must be properly packaged, labeled, and the required documentation generated. A P/WRE must be received from Radiological Engineering for this waste stream. All packages of hazardous waste will be inspected by CSO before they are transferred to Waste Operations for storage in a RCRA permitted unit prior to disposal. Hazardous waste will not require a Waste Inspector to certify the waste. Any items or debris contaminated with or containing hazardous waste must be managed as hazardous waste.



### 4.3 MIXED WASTE

A mixed waste is classified as a hazardous waste that has been mixed with radioactive waste. All mixed waste generated during this project will be managed in accordance with the Colorado Hazardous Waste Regulations 6 CCR 1007-3, and will be staged, managed, and inspected in a 90 day area and a RMA after generation and packaging. LLM waste from the project will not be compliant to RCRA Land Disposal Restrictions (LDR). This waste will not meet the universal treatment standards for Cadmium, which is consistent for SEP sludge debris waste generated during past activities.

LLM will be shipped in accordance with DOT regulations as either SCO or LSA category material. The Radiological Characterization for Surface Contaminated Objects procedure (PRO-267-RSP-09.05) will be used to make the radiological evaluation whether a waste is SCO or LSA. Porous material such as wood and PPE will be shipped as LSA waste. Non-porous waste material such as metal, plastic, and rubber will be shipped as SCO waste. SCO waste will be packaged into wood boxes. LSA waste will be packaged into wood boxes if activity is estimated to be below the  $A_2$  value, or IP-2 metal boxes if above the  $A_2$  value.

LSA and SCO waste will not be sent to the non-destructive assay (NDA) counter at Building 569. The SEP area is not a Material Accountability Area (MAA), and the waste is non-accountable material. Radiological Engineering will provide the documentation for the radioactive characterization of waste generated by the project. LSA waste package activity will be determined by weight based calculations that consider waste matrix, isotopic blend, and existing gross alpha/beta analysis. SCO waste package activity will be determined from weight based calculations derived from surface area and removable & fixed contamination surveys. A Radioactive Waste Variance (98-30) has been granted to exempt packages from going to RTR when a Waste Inspector is present during all packaging operations.

LLM waste will be generated, packaged and managed in compliance with the Waste Characterization, Generation and Packaging Procedure (1-PRO-079-WGI-001), Hazardous Waste Requirements Manual (1-10000-HWR), Solid Radioactive Waste Packaging Requirements (1-M12-WO-4034), and Solid Radioactive Waste Packaging (4-D99-WO-1100), with all required documentation. Sludge removed from hoses will be packaged by guidance from a packaging aid written by the CSO. Radiological Technicians will perform the required surveys on the packages and the Waste Inspector and CSO will perform inspections before they are transferred to Waste Operations for storage and subsequent disposal.

LLM packages will be staged in a 90 day area that is also a RMA outside to the North of 207C Pond. Empty and full boxes will be limited to groups of no more than ten, elevated off the ground, and covered with fire retardant tarps. Full boxes will be transferred expeditiously from the SEP area to reduce exposure to the elements. RCRA inspections and surveillance will be conducted at least weekly. LLM that results from decommissioning activities will be stored onsite, or when appropriate, shipped directly to an approved offsite disposal facility.

LLM waste items that are plastic, metal, or rubber (hoses) may be treated to the alternative treatment standards for hazardous debris by physical extraction (waterspray). The resultant waste will be considered LLW and not LLM if it meets the "clean surface debris standards". All wash water and rinsate generated during RCRA Closure activities will be treated as mixed waste at Building 374.

#### **4.4 INDUSTRIAL SANITARY WASTE**

Industrial Sanitary waste is waste that meets industrial sanitary landfill requirements. Industrial Sanitary waste is not hazardous, not radioactively contaminated, and does not contain asbestos, PCBs or other prohibited items. A P/WRE must be received from Radiological Engineering for this waste stream.

The subcontractor will follow the procedure Sanitary Waste Offsite Disposal, (1-PRO-573-SWODP), which describes the method for preparing and shipping the waste, and lists the items prohibited from being packaged. It will be the responsibility of the subcontractor, with monitoring by the Waste Coordinator, to comply with this procedure. This waste will be loaded into a roll-off for disposal at Front Range Landfill. Front Range Landfill will provide safe transportation of the waste to the landfill. Traffic Management will prepare the Bills of Lading for the shipments. Sanitary Waste Programs personnel will inspect and coordinate these shipments.

#### **4.5 TOXIC SUBSTANCE CONTROL ACT (TSCA) WASTE**

Non-radioactive contaminated PCB waste may be produced from the removal of ballasts from light fixtures. This waste will be generated, packaged, and managed in compliance with the TSCA Management Plan (1-10000-EWQA), Non-Radioactive Waste Packaging (1-C88-WP-1027-NONRAD), and the Waste Characterization, Generation and Packaging Procedure (1-PRO-079-WGI-001). Ballasts must be properly packaged in drums, labeled, and the required documentation generated. Non-leaking PCB ballasts will be stored for less than 30 days in the SEP area. A P/WRE must be received from Radiological Engineering for this waste stream. Packages of TSCA waste will be inspected by CSO before they are transferred to Waste Operations for storage and disposal. TSCA waste will not require a Waste Inspector to certify the waste. The Waste Disposal group will then be responsible for coordinating offsite shipment and disposal.

#### **4.6 ASBESTOS WASTE**

The asbestos containing waste material generated during the decommissioning of Building 788 Cluster will be roof shingles from T788A porches. The brown tar has been determined to be non-friable ACM. A permit will be obtained from CDPHE to remove the asbestos waste. Radiological Engineering has determined this waste will be LLW.

Low level asbestos waste will be shipped in accordance with DOT regulations as LSA category material. LSA waste will not be sent to the non-destructive assay (NDA) counter at Building 569. The SEP area is not a Material Accountability Area (MAA), and

the waste is non-accountable material. Radiological Engineering will provide the documentation for radioactive characterization, which will be determined by weight based calculations that consider waste matrix, isotopic blend, and gross alpha/beta

analysis. This waste will be packaged into a wood box if its activity is estimated to be below the  $A_2$  value, or an IP-2 metal box if above the  $A_2$  value. A Radioactive Waste Variance (98-30) has been granted to exempt packages from going to RTR when a Waste Inspector is present during all packaging operations.

Asbestos containing materials will be generated, packaged, and managed in accordance with the Colorado Air Quality Control Commission Regulation 8, Occupational Safety and Health Agency (OSHA), Waste Characterization, Generation and Packaging Procedure (1-PRO-079-WGI-001), Solid Radioactive Waste Packaging Requirements (1-M12-WO-4034), and Solid Radioactive Waste Packaging (4-D99-WO-1100).

The AE/C/CM or RMRS will provide the waste generators for packaging. A Waste Inspector will be present to provide In-Process inspection of this waste. The waste generators will then package and label the waste according to the WGI. The Waste Coordinator will ensure all required documentation is completed. Radiological Technicians will perform the required surveys on the packages and the Waste Inspector and CSO will perform inspections before they are transferred to Waste Operations for storage and disposal.

#### **4.7 NON-REGULATED WASTE**

Non-Regulated waste is defined as a waste that does not exhibit hazardous characteristics or that is not listed in 40 CFR 261 or the Code of Colorado Regulations (CCR), 6 CCR 1007-3, Colorado Hazardous Waste Regulations, and is not radioactively contaminated. A P/WRE will be provided by Radiological Engineering for this waste stream. Solid non-hazardous waste will be generated, packaged and managed to the Waste Characterization, Generation and Packaging Procedure (1-PRO-079-WGI-001), and Non-Radioactive Waste Packaging (1-C88-WP-1027-NONRAD). The Waste Coordinator will ensure all required documentation is completed. CSO will perform the required inspections on the paperwork and packages. Waste will then be transferred to the appropriate Waste Operations storage unit.

Liquid non-hazardous waste will be managed in much the same way as solid non-hazardous waste, with the exception that the liquid will be sampled for fingerprint analysis and radioactive screening to verify characterization. It is assumed these liquids are non-hazardous and non-radioactive in nature due to their being collected from a closed system, and did not come into contact with hazardous or radioactive materials. Once the characterization is verified with analytical results, the drums will be transferred to the appropriate Waste Operations storage unit.

#### **4.8 PROPERTY UTILIZATION AND DISPOSAL MATERIALS**

PU&D materials, as defined in this WMP, are those materials that have been accepted for storage and reuse by PU&D. These materials include, but are not limited to selective pieces of equipment which are located in non-contaminated areas or have been located in contaminated areas and confirmed as non-contaminated through radiological survey. Material going to PU&D must be dispositioned according to the Property Management Manual, Chapter V, Section 5.3.3, Economic Disposal Plan. Items going for reuse will be coordinated with the PU&D organization. A P/WRE will be required for all items. All capital equipment / property will be properly accounted for and dispositioned.

#### **4.9 RECYCLE MATERIAL**

Potentially radioactive contaminated metal items will be segregated, size reduced and shipped to the GTS Duratek metal melt facility as recyclable material. Metal items that would be considered mixed waste under the Colorado Hazardous Waste regulations are exempt if recycled. They will be combined with straight low level items and sent to the metal melt facility. Survey units will provide the documentation for radioactive characterization. Recycled metal will be shipped as a Limited Quantity, SCO I, or SCO II for the DOT shipping classification depending upon calculated activity of the package.

The metal will be packaged into sealand cargos provided by the metal melt facility under the guidance of the Waste Disposal group. Most non-metallic pieces will be segregated from the metal, although small incidental non-metallic pieces will be acceptable. If items have larger non-metallic pieces that are not considered incidental, then a letter will be given certifying that it is not a hazardous waste. A dynamometer will be used when loading the sealands to ensure weight limits are not exceeded. Waste Acceptance Guidelines (WM-ADM-I-101) will be followed when packaging the recycle metal.

Lead acid batteries are exempt from the Colorado Hazardous Waste Regulations because they are recyclable. When removed from equipment they will be surveyed as directed by a P/WRE, and the leads will be shielded with tape before they are banded to a pallet. The Waste Coordinator will ensure all documentation is completed. The pallet will then be transferred to Waste Operations storage unit 5001 for disposal at a recycle facility.

#### **5.0 WASTE PACKAGING**

All waste types generated by the project will be sorted at the time of removal. The waste will be staged for size reduction, or treated to debris standards before packaging. Radioactive waste will be surveyed as part of a survey unit to determine the level of radioactive contamination on its surface. SCO waste will be logged onto the SCO worksheet with an estimate of each items surface area. Waste will only be packaged into DOT approved packages specified on the appropriate WGI or packaging aid, and ordered through CSO at the warehouse. Full size wood or metal boxes will be used for packaging most LLW and LLM waste. Metal boxes will be used if the package activity is greater than the  $A_2$  value, if wood boxes are unavailable, or if restrictions or

circumstances dictate the use of metal boxes. Small quantities of LLW may be packaged in 55 gallon drums, as will LLM wash water and rinsate. Drums or boxes will be used for Non-Regulated and TSCA waste. Packages do not require Tamper Indicating Devices (TID) applied because they do not contain classified material, or come from a MAA. Closed packages of radioactive waste will be weighed and the results given to Radiological Engineering for calculation of package activity.

Waste / Residue Travelers will be completed for each package of waste generated by the project in accordance with procedure (1-C80-WO-1102-WRT). All sections will be completed by the waste generator or signed off by the applicable discipline. The Traveler will contain a copy of the Waste Environmental Management System (WEMS) container accuracy report, and the WSRIC waste stream sheet. Radioactive packages will have the dock inspection and a copy of waste variance 98-30. Non-radioactive packages will have a copy of the P/WRE. WEMS will be updated with the waste package status as changes occur, per Controls for Updating Waste Package Information in WEMS (1-PRO-Q11-WO-1221). All fields including the radioassay results and radiation protection measurements will be completed.

Recycle metal destined for the metal melt facility will be packaged into sealand cargos provided by GTS Duratek. Cranes may be required to assist in the loading of heavy items into the open tops of the sealand. The metal will be packaged to Waste Acceptance Guidelines (WM-ADM-I-101) from the GTS Duratek Bear Creek Operations in Oak Ridge, Tennessee. Sealand information will be entered into WEMS to track the quantity of metal for recycle.

Industrial Sanitary waste may be placed in rollofs under the guidance of the Sanitary Waste Program. These rollofs are provided by Front Range Landfill. Only waste that meets the WAC outlined in the Sanitary Waste Offsite Disposal Procedure (1-PRO-573-SWODP) will be packaged. Additional items may be placed onto pallets for transfer to PU&D. Liquid rinsate collected from treatment and closure activities will be collected into 55 gallon drums and sent to the onsite treatment facility at Building 374.

## **6.0 WASTE CERTIFICATION**

Independent Waste Certification activities will be conducted by trained personnel assigned to the project (Waste Inspector), and by the Waste Certification and Oversight (WCO) group. The Waste Inspector will conduct In-Process Waste Inspections to procedure (4-H62-WI-4011), and Dock Inspections to procedure (4-I82-WI-4012). WCO certifies that radioactive wastes are properly segregated and packaged based on a thorough review of inspection, test, and surveillance information. The WCO group will perform the Final and Loading Inspection for Packages to procedure (4-M63-WI-4013). The Waste Characterization data and packaging requirements for low-level waste will meet the requirements of the Nevada Test Site's Waste Acceptance Criteria (NTSWAC, Rev. 1 8/97). WCO certifies that the LLW meets all applicable waste acceptance criteria for disposal and DOE, EPA, and DOT requirements.

Release of non-hazardous material, debris, and equipment from a site contaminated with hazardous materials is accomplished by demonstrating that the materials or wastes do not exhibit any of the characteristics of hazardous waste as identified in Subpart C of 6 CCR 1007-3 SS261 or from Subpart D. Process knowledge and operating history related to the facilities can also be used to segregate hazardous contaminant areas from unaffected areas.

The D&D WSRIC book will be used to document waste characterization during D&D activities in the Building 788 Cluster. This book describes the waste streams and provides characterization information, and is controlled by the WSRIC Characterization and Reverification procedure (4-H19-WSRIC-001). At the completion of this project, the Building 788 WSRIC book will be revised to include Process 2, which will contain information on all waste generated during this project. The Building 788 WSRIC book will be archived after this information is added.

## **7.0 ONSITE STORAGE, TRANSPORTATION, AND FINAL DISPOSITION**

HAZ and LLM will be temporarily staged in RCRA 90 day area 788-2482. A Non Regulated Area will be established to store other project waste. All storage areas associated with the Building 788 Cluster will be closed when all waste has left the SEP area. This will include the closure of RCRA Units 21 and 48.

Wastes not shipped directly offsite will be relocated to an appropriate onsite storage unit. Waste Operations will designate the appropriate storage location for this waste. Waste Operations personnel will provide site surveillance support to ensure that hazardous and mixed wastes are being managed in accordance with the conditions established in the current Site RCRA Permit. With proper approvals, it may be possible to ship the waste directly offsite. Recycle metal and Industrial Sanitary waste will be shipped from the project directly offsite.

The Project Team, Waste Disposal Projects, and Traffic Management will be responsible for assuring the requirements for offsite transportation of waste to an approved DOE vender are met. This includes complying with DOT regulations, the Rocky Flats Transportation Safety Manuals, and the WGI, which summarizes all relevant Site waste packaging procedure requirements.

## **8.0 WASTE MINIMIZATION**

The philosophy of waste minimization will be utilized in the planning and management of project generated wastes. Standard decontamination operations and debris treatment processes will be evaluated to determine if the minimization of LLM waste will be implemented. The reduction of LLM waste to straight LLW will generate a significant rinsate volume that requires packaging, analysis and disposal. A cost benefit analysis is being developed to determine if the cost to free release waste is greater than the cost of disposal as radioactive waste. If the cost is greater to free release, then the waste will be disposed of as low level radioactive contaminated waste.

Opportunities for waste minimization through recycle metal melt will greatly reduce the quantity of waste being generated by the project. Almost all metal items that are generated will be shipped to the GTS Duratek facility and be recycled as a usable product. Lead acid batteries will be recycled at Resources Plastics Inc.

## **9.0 COMPLETION REPORT / RECORDS**

Upon completion of the project, a Project Completion Report will be prepared. This report will include a listing of the wastes removed from the building, characterization data, WSRIC waste stream number, and waste dispositioning information (e.g., size reduction, decontamination, or treatment) which contributed to the final forms and volumes of the wastes resulting from this project.

All records generated as a result of the implementation of this document are identified in the implementing procedure. Project records will be handled in accordance with the RMRS procedure Record Identification, Generation, and Transmittal, RM-06.02. Original data used for characterization is stored in the Kaiser-Hill Analytical Services Division Records Repository under Report Identification Number 99A3190. Additional results were also uploaded into the Site Soil & Water Database for digital archival and data management purposes. Uploaded data were subsequently checked for accuracy (QC) by the RMRS Sample Manager. All other data acquired that support this report will be archived in the RMRS Project File, following peer review and under the auspices of the Project Manager, and will ultimately be submitted to the RMRS Records Center for permanent storage and retrieval.

## 10.0 REFERENCES

1-10000-HWR, Hazardous Waste Requirements Manual  
1-PRO-079-WGI-001, Waste Characterization, Generation and Packaging  
1-PRO-573-SWODP, Sanitary Waste Offsite Disposal  
1-C88-WP1027-NONRAD, Non-Radioactive Waste Packaging  
PRO-267-RSP-09.05, Radiological Characterization for Surface Contaminated Object  
1-M12-WO4034, Radioactive Waste Packaging Requirements  
4-D99-WO1100, Solid Radioactive Waste Packaging  
1-10000-EWQA, TSCA Management Plan  
1-C80-WO1102-WRT, Waste/Residue Traveler Instructions  
1-PRO-Q11-WO-1221 Controls for Updating Waste Package Information in WEMS  
4-H62-WI-4011 In-Process Waste Inspections  
4-I82-WI-4012 Dock Inspections  
4-M63-WI-4013 Final and Loading Inspection for Packages  
4-H19-WSRIC-001 WSRIC Characterization and Reverification  
RM-06.02 Record Identification, Generation, and Transmittal  
WM-ADM-I-101 GTS Duratek Waste Acceptance Criteria  
Nevada Test Site's Waste Acceptance Criteria (NTSWAC, Rev. 1, 8/97)  
RCRA Part B Permit  
6-CCR 1007-3 Colorado Hazardous Waste Regulations  
Colorado Regulation 8  
Property Management Manual  
Rocky Flats Transportation Safety Manuals  
D&D Waste Stream and Residue Identification and Characterization  
DOE – Decommissioning Resource Manual  
Building 788 RCRA Closure Description Document RF/RMRS-98-288  
Building 788 Site Hazard Assessment Plan RF/RMRS-98-249